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IP DEPARTMENT
30 SOUTH 17TH STREET
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EXAMINER

GREENE, JASON M

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,052

Applicant(s)

YANG, ALAIN

Examiner

Jason M. Greene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) 50-69 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1,9,10/2004;2/2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-49, drawn to a glass fiber air filter media, classified in class 55, subclass 524.
 - II. Claims 50-69, drawn to a method of making a glass fiber air filtration media, classified in class 156, subclass 60.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the air filter media can be made by a other and materially different processes such as a process that does not include condensing the blended fibers or using a column feeder or a process wherein the facing layer is applied after the mat is cured. Furthermore, independent article claims 1 and 24 do not recite a facing layer and thus can clearly be made by other and materially different processes.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Won Joon Kouh on 6 February 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-49. Affirmation of this election must be made by applicant in replying to this Office action. Claims 50-69 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

7. The drawings are objected to under 37 CFR 1.84(u)(2) because the view number for Fig. 5 is not larger than the numbers used for reference characters. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

8. The information disclosure statement filed 28 January 2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a copy of EP 0 672 803

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A2 was not provided. However, since a copy of the reference was readily available, the reference has been considered by the Examiner.

Claim Rejections - 35 USC § 102

9.. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 5-7, 10, 14, 15, 18, 19, 24, 31-33, 36, 40, 41, 44 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Perrotta (US Patent 6,376,675).

With regard to claims 1, 5-7, 10, 18, 24, 31-33, 36 and 44, Perrotta discloses a glass fiber air filtration media comprising glass fibers and mono-component thermoplastic polymer (polyethylene) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbinderd)

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glass fibers, and wherein the glass fibers and the bonding fibers have an average fiber diameter of 0.1 μm in col. 2, line 57 to col. 6, line 38.

With regard to claims 14, 15, 40 and 41, Perrotta discloses the air filtration media comprising 10 wt% bonding fibers in col. 3, lines 38-45.

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

11. Claims 1, 5, 8-15, 17-21, 23, 24, 31, 34-41, 43-46, 48 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Yao et al. (US Patent Application Publication 2003/0211799 A1)

With regard to claims 1, 5, 17, 18, 20, 21, 24, 31 and 43-46, Yao et al. discloses a glass fiber air filtration media comprising glass fibers and mono-component or bi-component thermoplastic polymer (polyethylene or polypropylene/polyethylene terephthalate) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbonded) glass fibers, and wherein the bi-component thermoplastic polymer fibers comprise a thermoplastic core material and a thermoplastic sheath material having a melting temperature that is lower than the

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melting point temperature of the core material, wherein the sheath material forms bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers in paragraphs [0009] to [0085].

With regard to claims 8-13 and 34-39, Yao et al. discloses the functional (e.g. glass) fibers having an average length of 1.5 μm and the bonding fibers having an average length of 1 inch and a denier of about 0.5 to about 10 (corresponding to a diameter of approximately 3 to 75 μm depending on the density of the specific polymer) in paragraphs [0055] and [0087].

With regard to claims 14, 15, 40 and 41, Yao et al. discloses the plastic-containing bonding fibers being between 10 to 40 wt. % of the air filtration media in paragraph [0080].

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

With regard to claims 23 and 48, Yao et al. discloses the core material and the sheath material being the same thermoplastic polymer (nylon) but of different formulation (nylon 6 and nylon 6,6) in Table 1.

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12. Claims 1, 5-14, 17-21, 24-28, 31-40, 43, 45, 46 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Powers et al. (US Patent 5,580,459).

With regard to claims 1, 5, 17, 18, 20, 21, 24, 31-39, 43, 45 and 46, Powers et al. discloses a glass fiber air filtration media comprising glass fibers (the microfibers) and bi-component thermoplastic polymer (polyester/linear low density polyethylene) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbonded) glass fibers, and wherein the bi-component thermoplastic polymer fibers comprise a thermoplastic core material and a thermoplastic sheath material having a melting temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers in column 2, line 1 to column 5, line 3.

With regard to claims 6-13 and 32-39, Powers et al. discloses the glass fibers having an average diameter of 1 micron and an average length of 650 μm and the bonding fibers having an average diameter of 5 to 30 microns (including 15 microns) and an average length of 20 mm (0.79 inches) in col. 3, line 63 to col. 4, line 9 and col. 7, lines 39-57.

With regard to claims 14 and 40, Powers et al. discloses the plastic-containing bonding fibers being between 50 wt. % of the air filtration media in col. 4, lines 56-65.

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

With regard to claims 25-28, Powers et al. discloses the air filter being a bag filter, a cube filter, a pocket filter or a panel filter in col.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Cusick et al. (US Patent 5,800,586).

Perrotta, Yao et al. and Powers et al. do not disclose a thermoplastic non-woven facing layer being bonded to one of the two major sides of the air filtration media.

Cusick discloses a glass air filtration media (22) having first and second major sides, a thermoplastic non-woven facing layer comprising a polypropylene (see column

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7, lines 50-54) polymer bonded to one of the two major sides of the air filtration media in col. 1, line 43 to col. 8, line 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the facing layer of Cusick et al. into the air filtration media of Perrotta, Yao et al. or Powers et al. to facilitate the handling of the air filtration media, protect the air filtration media from abrasion, increase the integrity of the air filtration media, and minimize fiber loss, as suggested by Cusick et al. in column 3, lines 54-57 and column 7, lines 37-47.

15. Claims 4 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Sircar (US Patent 6,358,871 B1).

Perrotta, Yao et al. and Powers et al. do not explicitly disclose the glass fibers being rotary glass fibers.

Sircar teaches using rotary glass fibers to form air filtration media in column 2, lines 28-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the rotary forming of the glass fibers of Sircar into the air filtration media of Perrotta, Yao et al. or Powers et al. to allow the glass fibers to be formed having a fine-diameter using a conventional process, as suggested by Sircar in column 2, lines 28-64.

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16. Claims 16 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Miyake et al. (US Patent 4,548,628).

Perrotta, Yao et al. and Powers et al. do not explicitly disclose the variation in the gram weight of the air filtration media being $\pm 5\%$ or less.

Miyake et al. teaches forming air filtration media with a uniform basis weight (gram weight) in column 3, lines 33-41.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the uniform gram weight of Miyake et al. into the air filtration media of Perrotta, Yao et al. or Powers et al. to provide an air filtration media having consistent filtration performance across its major sides, as is well known in the art.

17. Claims 22 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. or Powers et al. in view of Mueller (US Patent 4,783,355).

Yao et al. and Powers et al. teach the sheath material being a thermoplastic polymer but do not teach the core material being a mineral.

Mueller teaches a similar bi-component fiber wherein the sheath material is a thermoplastic polymer and the core is a mineral (glass) in col. 2, lines 5-26.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the glass core of Mueller into the bi-component fibers of Yao et al. or Powers et al. to allow the media to be recycled more readily by reducing the number of different materials, as is well known in the art.

Furthermore, it would have been obvious to substitute the glass core of Mueller for the thermoplastic polymer core of Yao et al. and Powers et al. in that such are alternate materials in the art for providing a heat resistant, high melting point core of a bi-component fiber.

18. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Cusick et al. (US Patent 5,800,586) and Scanlon et al.

Perrotta, Yao et al. and Powers et al. do not disclose a thermoplastic non-woven facing layer being bonded to one of the two major sides of the air filtration media.

Cusick discloses a glass air filtration media (22) having first and second major sides, a thermoplastic non-woven facing layer comprising a polypropylene (see column 7, lines 50-54) polymer bonded to one of the two major sides of the air filtration media in col. 1, line 43 to col. 8, line 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the facing layer of Cusick et al. into the air filtration media of Perrotta, Yao et al. or Powers et al. to facilitate the handling of the air filtration media, protect the air filtration media from abrasion, increase the integrity of the air filtration media, and minimize fiber loss, as suggested by Cusick et al. in column 3, lines 54-57 and column 7, lines 37-47.

Cusick et al. does not disclose the facing layer being polyethylene.

Scanlon et al. discloses an air filter media (20) having a polyethylene facing layer in col. 4, lines 11-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polyethylene facing material for the polypropylene material of Cusick et al. to reduce the number of different materials in the filter media when the sheath material is polyethylene to allow the filter media to be recycled more readily.

Furthermore, it would have been obvious to substitute the polyethylene of Scanlon et al. for the polypropylene of Cusick et al in that such are alternate materials in the art for providing a facing layer for an air filter media.

Conclusion


19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Greene
Primary Examiner
Art Unit 1724



2/8/06

jmg
February 8, 2006